February 1971

POLLUTION

Some questions and answers.

Pollution—Some questions and answers.

Many concerned citizens have been asking us about pollution. Some have doubts about Dofasco's well-known $35 million pollution fight, since they can still see smoke coming from our stacks. Others are just trying to gain an overall knowledge of pollution problems.

This booklet tries to answer the most commonly asked questions, not only about pollution problems at Dofasco, but about pollution in general. It doesn't ask all the questions and it certainly does not provide all the answers. Its goal is to promote, at least in a small way, a better understanding of this vitally important problem.

We should point out at the beginning that any serious student of pollution problems in the steel industry should have some knowledge of steelmaking. Massive quantities of raw materials are required to make millions of tons of steel. Dramatic chemical transformations take place in steelmaking. Many millions of dollars are required to buy equipment to make steel. That makes the question of pollution in the steel industry very difficult to grasp.

If you feel that your knowledge of steelmaking is inadequate, Dofasco will be happy to supply you with booklets on steelmaking. Also, should you have any questions that are not answered in this booklet, please do not hesitate to write to us at P.O. Box 460, Hamilton. We will do our best to answer every question.

What is pollution?

AIR. Polluted air is air which contains excessive concentrations of foreign materials, liberated by nature or the activities of man, which adversely affect the safety or well-being of people, or the full use and enjoyment of their property. Air pollutants can be broken down into three groups: coarse solid particles (dust) which settle out of the air; fine particulates of solids or liquids which do not settle, and gases.

WATER. We must begin by saying that there is no such thing as naturally pure water. Water pollution, therefore, cannot be defined simply as the presence of foreign substances in the water. Any substance in ground or surface water can (under some circumstances), be a potential pollutant; yet no substance, if sufficiently diluted, will be a pollutant. Pollution of a body of water could, therefore, be defined as the introduction into it of substances of such character and in such quantity that its natural quality is so altered as to impair its usefulness, or render it offensive to the sense of sight, taste or smell.

What are the major sources of pollution and what are the pollutants?

AIR POLLUTION. While no figures are available for Canada, pollution in this country would be fairly similar, at least in urban areas, to that of the United States. Pollution sources in that country are as follows:

Automobiles	Industry	Power Plants	Space Heating	Refuse Disposal
61%	16%	13%	6%	4%

The five major pollutants from these sources are: carbon monoxide, hydrocarbons, oxides of nitrogen, sulphur oxides and solid particles (dust).

WATER POLLUTION. Since pollution varies with different bodies of water, it is impossible to give a national average on water pollution. We will, therefore, confine ourselves to the sources of pollution and the major pollutants in Hamilton Bay. The two most important sources of pollution in Hamilton Bay are industry and municipal sewage. It is impossible to establish an order of importance since they discharge different types of pollution. The major pollutants in Hamilton are: human waste, nutrients, suspended solids (including iron oxide and dirt), dissolved iron, oils and other chemicals.

What are the effects of the major pollutants and how are they produced?

CARBON MONOXIDE. The toxicity of this gas is due primarily to its affinity for haemoglobin, the oxygen carrier of the blood. It is non-toxic to insects or other lower forms of life which do not have red blood cells.
If 500 p.p.m. (parts per million) of carbon monoxide are inhaled until equilibrium is reached, 50% of the haemoglobin will be combined with carbon monoxide, cutting the oxygen carrying capacity in half. This causes headache, nausea, irritability, increased respiration, chest pain, confusion, impaired judgment and fainting on increased exertion.

The following is a table listing the effects on people of the various levels of concentration of carbon monoxide in the air:

CONCENTRATION (p.p.m.)	EFFECT
100	Allowable for several hours
400 - 500	No appreciable effect in 1 hour
600 - 700	Slight effect under 1 hour
1000 - 1200	Unpleasant but not dangerous symptoms after 1 hour
1500 - 2000	Dangerous for exposure of 1 hour
4000 or more	Dangerous in less than 1 hour

The Ontario Air Management Branch objectives are as follows:

1 hour average	40 p.p.m.
8 hour average	15 p.p.m.
24 hour average	8 p.p.m.

Readings in Hamilton (at Wentworth and Barton Streets) taken in December 1969, were as follows:

Average	3 p.p.m.
Maximum daily average	10 p.p.m.
Maximum 1 hour average	20 p.p.m.

The largest single source of carbon monoxide pollution is the internal combustion engine. Pollutants in the exhaust are caused by incomplete burning of the fuel.

NITROGEN. Hydrocarbons are produced from the internal combustion engine, but also from the incomplete incineration of waste and partial combustion of all liquid and solid fuels and gas. Oxides of nitrogen occur from the combustion of all types of fuels — coal, oil, natural gas, gasoline and diesel fuel. These two chemical compounds react photo-chemically when exposed to the rays of the sun. The resulting smog is made up of peroxyacyl nitrates (P.A.N.) and ozone (O_3). These chemical compounds cause eye irritation and plant damage.

SOLID PARTICLES (DUST). Particulate matter or dust can take many forms. In the Hamilton area, iron oxide is the largest single category of particulate matter. Depending on the concentration, solid particles (dust) when joined with sulphur dioxide, can cause discomfort or more serious health effects, particularly in people with chronic respiratory disease. It also soils buildings, streets, etc.
In Hamilton, particulate matter is taken into account in calculating the air pollution index (see A.M.B. air pollution index table on pages 6 and 7 for concentrations of particulate matter).

In Hamilton the major sources of particulate matter pollution are the steel and foundry industries. There are also natural causes such as wind raising dust, etc.

SULPHUR OXIDES. These gases cause corrosion and other damage to wires, metals, textiles and building materials. Many green plants are particularly sensitive to sulphur dioxide and are injured by exposure of a few hours to concentrations as low as 0.3 parts per million. It has been shown that when levels of sulphur dioxide and particulate matter are high, there is a greater occurrence of respiratory disease.

In December 1969 the average sulphur dioxide reading in Hamilton was .04 p.p.m.

Maximum daily average	.10 p.p.m.
Maximum 1 hour average	.18 p.p.m.

The objectives as set by the Air Management Branch of the Province of Ontario are:

Maximum daily average	.10 p.p.m.
Maximum 1 hour average	.25 p.p.m.

The major sources of sulphur oxides are the fuels burned in power plants, industry and space heating.

WATER.

HUMAN WASTE (SEWAGE). This is probably the worst kind of pollution because of the amounts of oxygen that are required to decompose the organic matter contained in human waste. The average volume of domestic sewage is 100 gallons per person per day. This sewage, if improperly treated, can pose a great hazard to human health.

NUTRIENTS (FERTILIZERS). Another method whereby a body of water can be destroyed is called eutrophication. Marine plants such as algae are force-fed through the addition of large amounts of nutrients resulting in their proliferation. The ability of the water to decompose the excessive amount of algae is destroyed. Such decomposition requires more oxygen than is present in the water, thus killing the body of water. Phosphates are one of the most significant nutrients. They come mostly from detergents and human waste.

IRON FINES. Iron fines which come from the steel industry are a significant problem in Hamilton Bay. They settle out on the bottom and form a coating which prevents the bay from sustaining any desirable form of life at the bottom, including plants and fish.

OILS. Oil pollution in Hamilton Bay comes mostly from industry and shipping. In addition to having some biological effect it seriously impairs the appearance of a body of water.

DISSOLVED IRON. Dissolved iron is eventually transformed into a suspended solid and has the same effect as iron fines. In addition, it has an oxygen demand.

Does Dofasco really care about what happens to the environment?

Dofasco is not a cold, impersonal legal entity. Its management and employees represent a collection of 8,000 human beings. These people must work, live, breathe and play in the same environment as everyone else. They share the same concerns.

The realization of what is happening to our environment has created a major thrust toward correcting our pollution problems. The company is pledged to meeting all government standards. To do the job, a special department was created. Its manager reports directly to the President on pollution matters. His job is to develop, maintain and control extensive anti-pollution programs throughout the company.

Many obstacles remain to be surmounted: technology is not always available; building and installing the complex equipment necessary takes time and money, but Dofasco is tackling the problem with vitality and determination.

Dofasco employees have been asked to participate in the fight, and cash awards are made to any employee who submits a workable idea on ways to eliminate pollution throughout the plant. In one way or another, every Dofasco employee is involved in the fight against pollution.

Okay, so you're doing something about pollution, but why haven't you done something before now?

We have. We were the first steel producer in North America to use the basic oxygen process. Air pollution control equipment was built into these furnaces when they were installed in 1954. In addition, electrostatic precipitators have been installed in Dofasco's blast furnaces as they were constructed, and settling basins to remove solids from water discharged into Hamilton Bay date back to 1955.

In the last decade, $14 million was spent to fight pollution. A biological oxidation plant removes phenols. A plant was built to remove chemicals from coke oven gases. Scrubbing equipment was installed in the steelmaking operations. There are many other projects. They are listed on pages 12 to 15.

How much pollution is caused by Dofasco? How much are you going to remove?

In the field of air pollution, Dofasco discharges approximately 15* tons of particulate matter (dust) into the air per day. This represents approximately 15%** of the dust discharged into Hamilton's air. The goal set for Dofasco by the Air Management Branch of the Province of Ontario is 2 tons per day. According to the A.M.B. if similar reductions by other sources take place, Hamilton's level of solid particles (dust) would be reduced to an acceptable quantity on a permanent basis.

Dofasco fully intends to meet the government standards. Furthermore, it is committed to keeping the emissions of particulate matter to that level, regardless of how much the company expands.

In addition to particulate matter, Dofasco emits sulphur dioxide, oxides of nitrogen and other chemicals, but the quantities emitted are lower than the A.M.B. standards.

Water pollution will be reduced to meet the standards established by the Ontario Water Resources Commission. Present Dofasco effluents and OWRC objectives are as follows:

*Dofasco estimate
**A.M.B. estimate

CONTAMINANTS	1969 CONCENTRATION OF WATER CONTAMINANTS DISCHARGED INTO HAMILTON BAY (P.P.M.)	O.W.R.C. OBJECTIVES (P.P.M.)
Organic Material (BOD)	22	15
Suspended Solids	155	15
Iron	61	17
Ether Solubles (Oil)	22	15
Phenols	.5	.02
Cyanide	1.4	(objectives under consideration February '71)
Chromates	.25	"
Ammonia	9	"
Phosphates	.25	"

Do you receive air pollution index readings for the Hamilton area? Do they have any bearing on your operation?

There is a direct hookup between Dofasco and the Pollution Index offices. A comprehensive contingency plan is in force, with specific steps to be followed when the index rises to the first caution level of 32. More and more equipment is cut back as the index rises. By the time the index has reached 50, voluntary cutbacks will have reduced emissions by more than 30%.

When the index reaches 50 the Minister of Energy and Resources Management is authorized to order production cutbacks. The company will of course comply with any order issued by the Minister.

The program of voluntary cutbacks cannot be introduced on a permanent basis as it would eventually cause a drastic reduction in output and jobs. As Dofasco's pollution control program progresses, the interim measures in the voluntary cutback program will become less and less necessary.
The following is a chart indicating the various levels of pollution as determined by the Air Pollution Index:

A.P.I.	INTERPRETATION
Under 32	Acceptable air quality
32 (advisory level)	Major sources of pollution asked to make voluntary cutbacks
50 (first alert)*	Major sources ordered to cut back
75 (second alert)*	Further cutbacks ordered
100 (episode level)*	Curtailment of all sources not essential to public health or safety

*If six-hour weather forecast indicates continuity of this A.P.I. level

EXAMPLES OF PAST EPISODES

Grey Cup Day (Toronto)	1962 —	A.P.I.	155
London, England	1952 —	A.P.I.	580 (20% increase in mortality)

NOTE:
Patients with chronic respiratory disease experience an accentuation of symptoms above an A.P.I. of 58.

What is the Air Pollution Index?

The Air Pollution Index (A.P.I.) is the average of the past 24 hours' readings of particulate matter and sulphur dioxide, calculated from an empirical formula. Hamilton's formula is different from that used in Toronto.

COH (The Coefficient of Haze) is a dimensionless number representing the concentration of particulate matter (dust). SO_2 is the concentration of sulphur dioxide measured in parts per million.

The empirical equation for Hamilton's A.P.I. is:

$$API = 2.5\,(13.9\,COH + 104.5\,SO_2)^{0.8}$$

The Toronto equation is:

$$API = .2\,(30.5\,COH + 126.0\,SO_2)^{1.35}$$

The sampler automatically produces the COH number by comparing light transmitted through a clean filter paper and the amount of light transmitted after the filter traps particulate matter from the air. SO_2 readings are provided by an instrument using wet chemistry and electronics.

Each hourly reading of COH and SO_2 is telemetered to the computer in the main office of the Air Management Branch in Toronto. The A.P.I. is the running average of the past 24 hourly values of COH and SO_2 concentrations. Individual readings may vary dramatically but the 24 hour average smooths out the readings, allowing the index to rise and fall gradually.

The Air Management Branch applies the A.P.I. only in concert with six-hour weather forecasts. Warnings to pollution sources occur only if the index is high (32 or greater) and the weather is not expected to improve for at least six hours.

The location of the Hamilton monitoring station is Woodland Park, at the corner of Barton and Sanford. It contains duplicate instruments to guarantee reliable readings. The location was chosen from past measurements, to provide a typical average value of Hamilton's air pollution.

What is an inversion and what effects do inversions have on pollution?

An inversion occurs when the temperature within a layer of air increases with height. An inversion inhibits the rise and dispersion of pollutants emitted into the atmosphere. Thus, when pollutants are emitted near the ground during an inversion they remain and cause high concentrations to develop. When temperatures decrease with height, the warmer air near to the ground and the pollutants emitted into it rise and disperse high in the atmosphere. Concentrations of pollutants in the lower layers of the atmosphere are lower.

Inversions occur due to various reasons. The most common is the radiation inversion. During any clear night the air cools off faster in the layer near the ground than aloft. A ground based inversion develops and remains until morning. After the sun rises, the air near the ground warms up first and the inversion breaks down. If a cloud cover moves in prior to the sunrise, the inversion will continue during the day and high pollution levels will develop.

Another type of inversion is the advection inversion. Such an inversion occurs over areas neighbouring oceans or large lakes such as Lake Ontario. During the spring and early summer the air over the lake's surface is cooled by the comparatively cool water. The air over the ground, especially in cities such as Toronto and Hamilton, warms during the day and rises. The warm air is replaced by the cool air from off the lake, thus setting up an inversion in the lower layers of the atmosphere.

A third type of inversion is known as a subsidence inversion. Subsidence inversions occur aloft and are caused by the sinking motion of the air generally associated with large high pressure areas. The descending motion occurs to compensate for the lateral spreading of the air outwards from the high pressure area. Subsidence inversions become serious since calm or light wind conditions are also associated with high pressure areas. This is aggravated by the tendency for these highs to remain almost stationary for long periods of time. The inversions aloft act as a cap on the pollution emitted preventing it from dispersing high in the atmosphere. During such conditions the air pollution index reaches its highest levels.

Why can't you clean up pollution right now? How long do we have to wait?

Cutting down on Dofasco's pollution of air and water to meet government standards will take at least five years. By that time every major pollution causing activity at Dofasco will be equipped with effective pollution control equipment.

Solving the pollution problem is largely a question of technology and engineering. When a problem is spotted, the first step to take is to study it and determine its precise extent. The second step is to explore ways to control the problem. Once this has been determined, the equipment to do the job must be designed, then built and later installed. Once installed it must be adjusted until it does the job it is designed to do.

Steelmaking equipment is so massive and complex that it takes years to build. For example, engineering work began in November 1968 on Dofasco's no. 4 blast furnace, but it won't be in full operation before early 1971. Yet the principles of a blast furnace have been known for years. This is not the case with some of the pollution control devices.

Some problems, however, are already known and the solutions to them are available. Dofasco is working on these problems first and much of the equipment is being installed now. In some areas the solutions to the problem are presently unknown.

Pages 12 to 15 give the complete list of Dofasco's anti-pollution projects, as well as their completion time and their cost.

Is Dofasco co-operating with government bodies to limit pollution?

Most definitely. Dofasco consulted all government departments involved at every level before establishing its anti-pollution program. All future production equipment will specify that it must meet established standards of pollution control as provided by the government bodies.

The Sherman Mine, one of Dofasco's long-term domestic sources of iron ore, at Temagami, Ontario, provides an excellent example of government-industry co-operation in environmental quality control. Long before construction of the mine was begun, a forty-year plan was developed to protect the environment. Agreement was reached between the company and the Department of Lands and Forests, Department of Mines, the Ontario Water Resources Commission and local conservation groups. Only when all concerned parties were satisfied that the environment around the Sherman Mine would be protected, were plans finalized.

As a result, the Sherman Mine provides a model of a pollution controlled mine and milling operation.

Who is in charge of your environmental control program?

Dofasco's Environmental Control Program is coordinated by Warren Rombough, a graduate engineer whose responsibilities include management of coke and iron production. These dual responsibilities are in many ways complementary. Iron and coke production are key problem areas in pollution control. To do a good job one must have an intimate knowledge of that part of the business. Mr. Rombough reports directly to the President in matters of pollution control.

Reporting to Mr. Rombough are three full-time pollution fighters, two engineers and one technologist. They specialize in air and water treatment facilities. The company's utilities department has several full-time personnel whose job it is to monitor both sources of pollution and the effectiveness of pollution control devices in addition to operating some of the control facilities. In the engineering department, several engineers and technicians specialize in the design, selection, building and installation of pollution control facilities. Technicians in the company's electrical and mechanical maintenance department make sure that pollution abatement devices operate efficiently.

In addition, the company has retained the Ontario Research Foundation, an independent research body, to monitor all sources of pollution from the company's operations. Also, several engineering consultant firms are being employed to devise pollution control methods. In the field of research, the company is helping sponsor a study at McMaster University and is participating in research being carried out in the United States by the American Iron and Steel Institute.

A lot of tin cans made from steel are lying around. Do you consider this your responsibility?

While we do as individuals, we cannot as a Company take responsibility for the misuse of the products we produce. The people who litter our streets, roads, and countryside are responsible, whether the litter is paper, bottles, tin cans, or garbage.

To prevent litter is everyone's responsibility. No amount of government legislation can solve the problem unless everyone does his share.

Isn't there another way to make steel with less pollution?

At the moment, there is no other proven method of economically mass producing steel. At Dofasco, steel is produced by the basic oxygen method, which was introduced in Canada by Dofasco and is the most modern available. This method is a decided improvement over other techniques in efficiency and is equipped with highly effective pollution abatement devices.

It is hoped that as the direct reduction process is developed and steel can be made without blast furnaces and coke ovens, pollution from steelmaking would be reduced.

To date, the process is not competitive with the existing methods.

What are the major types of pollution abatement devices used in the steel industry?

AIR.

DUST COLLECTING EQUIPMENT. (Electrostatic Precipitators). In this method, a wire is used to place an electric charge on the particles as the airstream goes through a passage. The walls of the passage have a charge opposite to that of the particles, thus forcing the particle to the wall. The particles are then removed. This type of collector is used in blast furnaces and open hearth furnaces.

SCRUBBERS. There is a variety of types of scrubbers. Dofasco uses the venturi scrubber, the packed scrubber and the orifice scrubber. Essentially, that method forces high speed air through an opening where it meets with a water spray. The water knocks the particles out of the airstream.

BAG HOUSE. A common method of collecting fine dust is to have the air which is carrying it filtered through cloth bags. These bags or collectors, operate on the same principle as a vacuum cleaner and are used to collect such material as iron oxide and silica sand.

WATER.

SOLIDS REMOVAL EQUIPMENT. One of the major devices for solids removal is the clarifier. In this method water is confined to a specific area and the solids are permitted to sink to the bottom. At Dofasco, the clear water is then permitted to flow into a lagoon, where further sedimentation takes place, prior to discharge into Hamilton Bay. Another similar method of solids removal is the scale pit, which operates on the same principle as the clarifier. In the scale pit the solids (mostly iron oxide) sink to the bottom, while oil comes to the surface. The iron is removed from the bottom and the oil is skimmed from the top.

REMOVAL OF CHEMICALS. A variety of processes is used to remove chemicals. In most of these the chemicals are treated to produce a usable by-product. In the case of phenol, the pollutant is removed by biological oxidation. Sulphur, ammonium sulphate and other chemicals are removed from coke oven gases. At Dofasco, a plant to regenerate hydrochloric acid is now being built.

FILTRATION EQUIPMENT. Filtration equipment is used in many areas. A plant is now being built that will filter effluents from some of the steel finishing operations. The filter media will be made of specially crushed coal and sand.

REMOVAL OF OILS. At the moment the only method used for oil removal is skimming. Studies are presently being conducted by an independent engineering body, to find more efficient ways of removing oil.

Pollution abatement installations.

DATE OF INSTALLATION	INSTALLATION	COST OF INSTALLATION
1950 - 1970	Miscellaneous Dust Collection at the Foundry	$ 250,000.00
1951	No. 1 Blast Furnace Dust Catchers	$ 150,000.00
1951	No. 1 Blast Furnace Gas Washer	$ 300,000.00
1951	No. 1 Blast Furnace Electrostatic Precipitators	$ 350,000.00
1951	No. 1 Blast Furnace Stock House Dust Removal System — Dry Filter	$ 50,000.00
1954 - 1965	Oil Mist Collectors and Scrubbers on Cold Mills	$1,000,000.00
1954	B.O.F. Venturi Scrubbers	$ 273,000.00
1955	No. 1 Pickle Line Fume Exhaust System	$ 35,000.00
1956	B.O.F. Venturi Scrubber	$ 75,000.00
1956	No. 2 Blast Furnace Dust Catchers	$ 200,000.00
1956	No. 2 Blast Furnace Gas Washer	$ 400,000.00
1956	No. 2 Blast Furnace Electrostatic Precipitators	$ 350,000.00
1956	No. 2 Blast Furnace Stock House Dust Removal System — Dry Filter	$ 75,000.00
1956	Hot Mill 2-Hi Scale Pit	$ 250,000.00
1956	Blast Furnace Dorr Thickener	$1,000,000.00
1959	Acid Collection Sump for No. 2 Pickle Line	$ 200,000.00
1959	No. 2 Pickle Line Fume Exhaust System	$ 35,000.00
1960	No. 3 Blast Furnace Dust Catchers	$ 200,000.00

Pollution abatement installations.

DATE OF INSTALLATION	INSTALLATION	COST OF INSTALLATION
1960	No. 3 Blast Furnace Gas Washer	$ 400,000.00
1960	Slurry Pumping System — Melt Shop to Thickeners	$ 300,000.00
1960	No. 3 Blast Furnace Electrostatic Precipitators	$ 450,000.00
1960	No. 3 Blast Furnace Orifice Scrubbers (replaced by Venturi Scrubber in 1968)	$ 100,000.00
1960	No. 3 Blast Furnace Stock House Dust Removal System — Dry Filter	$ 100,000.00
1961	No. 1 Blast Furnace Orifice Scrubbers	$ 100,000.00
1962	No. 2 Blast Furnace Orifice Scrubbers	$ 100,000.00
1962 - 1967	B.O.F. Venturi Scrubber improvements	$4,500,000.00
1964	Acid Collection Sump for No. 3 Pickle Line	$ 200,000.00
1965	Hot Mill 7-Stand Scale Pit	$ 750,000.00
1965	Oil Sump Collection System	$ 100,000.00
1965	No. 3 Cold Mill Pickle Line Fume Exhaust System	$ 150,000.00
1966 - 1968	Installation of skimmers for Cold Mill Oil Reservoirs	$ 600,000.00
1966	Cold Mill 5-Stand Oil Filter System	$ 500,000.00
1966	Automatic Scarfing Machine — Control of emissions of air and water	$ 750,000.00
1967	Phenol Plant	$ 344,000.00
1967	Ammonium Sulphate Plant	$1,300,000.00
1967	Stretford Plant (Hydrogen Sulphide)	$1,100,000.00

Pollution abatement installations.

DATE OF INSTALLATION	INSTALLATION	COST OF INSTALLATION
1967	Blast Furnace Lagoon	$ 150,000.00
1967	Link Belt Thickener and Improvements — 1967-1970	$1,500,000.00
1968	No. 3 Blast Furnace Venturi Scrubbers	$ 200,000.00
1968	Coke Oven Gas Cooling — Water Recirculation System	$ 50,000.00
1970	No. 4 Blast Furnace Dust Catchers	$ 350,000.00
1970	No. 4 Blast Furnace Venturi Scrubbers	$ 300,000.00
1970	No. 4 Blast Furnace Gas Washer	$ 500,000.00
1970	No. 4 Blast Furnace Electrostatic Precipitators	$ 500,000.00
1970	No. 4 Blast Furnace Stock House Dust Removal System — Wet Scrubber	$ 250,000.00
1970	Foundry Bag House	$ 350,000.00
1970	Foundry Gas Cleaning Equipment (Wheelabrater)	$ 130,000.00
1970	New sanitary sewer installations for Bay Front operations Phase 1	$ 340,000.00

PROJECTED DATE OF INSTALLATION	INSTALLATION	COST OF INSTALLATION
1971	No. 2 Sand System Dust Collection	$ 190,000.00
1971 (Sept.)	Equipment for reducing emissions from Coke Oven Quench Towers	$ 96,000.00
1971 (July)	Spark Box improvements on No. 1 B.O.F.	$1,100,000.00
1971	Improved Gas Cleaning Duct Work on Oxygen Steelmaking Furnaces	$1,000,000.00 (est.)
1971	Stretford process liquor incinerator system	$ 500,000.00

Pollution abatement installations.

PROJECTED DATE OF INSTALLATION	INSTALLATION	COST OF INSTALLATION
1971 - 1975	Miscellaneous	$2,500,000.00
1971	Revisions in Hot Metal Transfer and Kish Collection	$ 900,000.00 (est.)
1971	Equipment for controlling automatic scarfer emissions	$ 350,000.00
1971	Coke Oven By-Product Expansion a) Gas Scrubbing Equipment for sulphur removal from coke oven gases b) Equipment for removing ammonia from coke oven water	$1,000,000.00 $ 750,000.00
1971	Hot Mill Water Purification Plant	$4,000,000.00
1971	Pickle Line Acid Regeneration Plant	$5,500,000.00 (est.)
1971	Smokeless charging equipment for Coke Ovens	$ 200,000.00
1971	Automatic Coke Oven levelling door operators	$ 100,000.00
1971	Bag Filter System at North Coke Plant, Coal Handling Plant (No. 5 Battery)	$ 25,000.00
1971	De-Kishing Station to reduce particulate emitted during kish dumping	$ 500,000.00 (est.)
1972	Equipment for reducing dust emissions from Basic Oxygen Furnaces	$2,500,000.00 (est.)
1972	New sanitary sewer installations for Bay Front operations Phase II	$ 150,000.00 (est.)
1972	Cold Mill Water Purification Facilities	$4,000,000.00 (est.)
1973	Future installation of equipment for collection of fumes emitted during coke oven pushing	$4,000,000.00 (est.)
1973 - 1975	Future installation of equipment for collection of fumes emitted during casting of Blast Furnaces	$4,500,000.00

Message from the President.

February 1971.

The quality of our air and water is now a subject of vital concern to most people.

At Dofasco, our concern has been translated into meaningful action. Our company was one of the first to publicly commit itself to full cooperation with government authorities in the fight against pollution.

To bring pollution under control in a plant that makes more than two million tons of steel per year, is no easy task. The cost is high, the technology is not always available, the problems to surmount are numerous, but our battle against pollution must and will be won.

Sincerely,

F H Sherman

F. H. Sherman

DOFASCO Dominion Foundries and Steel, Limited P.O. Box 460, Hamilton, Ontario, Canada.